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## AMENDMENTS TO THE CLAIMS

Please add or amend the claims to read as follows, and cancel without prejudice or disclaimer to resubmission in a divisional or continuation application claims indicated as cancelled:

LISTING OF CLAIMS

1. (Currently amended) A method for enhancing underwater imaging affected by image degradation effects, the method comprising:

acquiring at least one image of an underwater scene using an imaging device;

determining attenuation ~~information regarding distances~~ of parts of the scene as acquired by ~~relative to~~ the imaging device and determining the contribution of veiling light to said acquired at least one image; and

reconstructing an image of the underwater scene using a physics-based mathematical model, compensating image characteristics influenced by the attenuation and the veiling light ~~distance-dependent underwater~~ degradation effects ~~including veiling light, using the information on the distances of parts of the scene from the imaging device~~, and compensating ~~distance-dependent~~ underwater degradation effects relating to the optical path between ~~distance of~~ illumination sources ~~from~~ and different parts of the scene.

2. (Currently amended) The method of claim 1, wherein the image characteristics are selected from a group of image characteristics ~~comprise at least one of the characteristics group~~ consisting of: contrast, color, sharpness, and brightness.

3. (Canceled)

4. (Currently amended) The method of claim [[3]]1, wherein ~~compensating effects attributed to the underwater depth of the scene~~ compensating underwater degradation effects relating to the optical path between illumination sources and the scene comprises white-balancing.

5. (Currently amended) The method of claim 1, wherein the physics-based mathematical model comprises an inversion of an image-formation model ~~including backscatter~~.

6. (Currently amended) The method of claim 5, wherein the ~~invenrion~~ inversion includes regularization.

7. (Original) The method of claim 5, wherein the image-formation model that is inverted is approximated such that the approximation error is not discernible.

8. (Original) The method of claim 1, wherein acquiring of at least one image of the underwater scene comprises acquiring at least two images in different imaging settings.

9. (Original) The method of claim 8, wherein said at least two images are acquired in different resolution.

10. (Original) The method of claim 8, wherein acquiring at least two images in different imaging conditions comprises acquiring at least two images of the scene in different polarizing states of the imaging device.

11. (Original) The method of claim 1, wherein acquiring said at least two images comprises acquiring said at least two images simultaneously.

12. (Original) The method of claim 1, wherein the reconstructed image comprises three-dimensional rendering of the scene.

13. (Currently amended) The method of claim 1, wherein the determined attenuation of parts of the scene ~~information regarding distances of parts of the scene relative to the imaging device~~ is used to reconstruct a distance map of the scene.

14. (Original) The method of claim 1, wherein the imaging device comprises a camera.

15. (Original) The method of claim 1, wherein the imaging device comprises at least two cameras.

16. (Currently amended) The method of claim 1, ~~wherein determining of information regarding distances of parts of the scene relative to the imaging device comprises extracting the information from~~ further comprising determining the distances of the parts of the scene from the imaging device based on said at least one image.

17. (Currently amended) A system for enhancing underwater imaging affected by image degradation effects, the system comprising:

an imaging device adapted to acquire at least one image of an underwater scene using an imaging device;

a processing unit for determining attenuation ~~information regarding distances~~ of parts of the scene as acquired by ~~relative to~~ the imaging device and determining the contribution of veiling light to said acquired at least one image; and

reconstructing an image of the underwater scene using a physics-based mathematical model, compensating image characteristics influenced by the attenuation and the veiling light ~~distance dependent underwater~~ degradation effects ~~including veiling light, using the information on the distances of parts of the scene from the imaging device~~, and compensating ~~distance dependent~~ underwater degradation effects relating to the optical path between ~~distance of~~ illumination sources ~~from~~ and different parts the scene.

18. (New) The method of claim 1, wherein the step of determining attenuation of parts of the scene as acquired by the imaging device and determining the contribution of veiling light to said acquired at least one image is done using image data from said at least one image.